CLAIMS

What is claimed is:

1. In a network device, a method of processing a service request, comprising:

receiving a service request;

sending a plurality of packets in response to receiving the service request, each of the plurality of packets identifying a different type of service via which to send the corresponding packet; and

maintaining a mapping of each different type of service to an IP address, thereby enabling the service request to be processed via an IP address associated with a type of service identified in a first one of the plurality of packets to be received.

2. The method as recited in claim 1, wherein the service request is a TCP connection request or a DNS request.

3. The method as recited in claim 1, wherein the type of service indicates a service provider.

4. The method as recited in claim 1, wherein the type of service indicates a specific network connection or domain.

5. The method as recited in claim 1, wherein maintaining the mapping comprises maintaining a plurality of A-records, each of the A-records having a type of service field adapted for indicating a type of service and wherein receiving the request

comprises receiving a DNS A-record request.

6. A computer-readable medium, the computer readable medium storing thereon instructions for processing a service request in a network device, the computer-readable medium storing thereon:

instructions for receiving a service request;

instructions for sending a plurality of packets in response to receiving the service request, each of the plurality of packets identifying a different type of service via which to send the corresponding packet; and

instructions for maintaining a mapping of each different type of service to an IP address, thereby enabling the service request to be processed via an IP address associated with a type of service identified in a first one of the plurality of packets to be received.

7. A network device adapted for processing a service request, comprising:

a processor; and

a memory, at least one of the processor and the memory being adapted for:

receiving a service request;

sending a plurality of packets in response to receiving the service request, each of the plurality of packets identifying a different type of service via which to send the corresponding packet; and

maintaining a mapping of each different type of service to an IP address, thereby enabling the service request to be processed via an IP address associated with a type of service identified in a first one of the plurality of packets to be received.

8. A network device adapted for processing a service request, comprising:

means for receiving a service request;

means for sending a plurality of packets in response to receiving the service request, each of the plurality of packets identifying a different type of service via which to send the corresponding packet; and

means for maintaining a mapping of each different type of service to an IP address, thereby enabling the service request to be processed via an IP address associated with a type of service identified in a first one of the plurality of packets to be received.

9. In a network device, a method of processing a DNS request, comprising:

receiving a DNS request indicating a domain name for which an IP address is requested; and

transmitting a plurality of DNS responses, each of the plurality of DNS responses being transmitted via a different path associated with a different type of service.

10. The method as recited in claim 9, wherein the type of service indicates a service or service provider.

11. The method as recited in claim 9, wherein each of the plurality of DNS responses includes a different one of a plurality of IP addresses, each of the plurality of IP addresses being mapped to a different type of service.

12. The method as recited in claim 9, wherein each of the plurality of DNS responses has the same source address and destination address.

13. The method as recited in claim 9, further comprising:

providing a service identifier in each of the plurality of DNS responses, the service identifier identifying a service, type of service, or service provider that is to be used to route the corresponding DNS response.

14. The method as recited in claim 9, wherein each of the plurality of DNS responses comprises a type of service field adapted for indicating a type of service to be used during next-hop based routing based on the type of service.

15. The method as recited in claim 9, wherein receiving a DNS request comprises receiving a DNS A-record request and wherein transmitting a plurality of DNS responses comprises transmitting a plurality of A-records.

16. The method as recited in claim 15, wherein each of the plurality of A-records includes different IP address that is mapped to a type of service, service or service provider.

17. The method as recited in claim 16, wherein each of the plurality of A-records further includes a field adapted for identifying the type of service, service or service provider.

18. The method as recited in claim 17, further comprising:

maintaining a table of A-records that includes the plurality of A-records

19. The method as recited in claim 9, wherein transmitting a plurality of DNS responses comprises transmitting the plurality of DNS responses to a client DNS server associated with a client initiating the DNS request.

20. The method as recited in claim 19, wherein the client DNS server is configured to identify a first one of the plurality of DNS responses to be received from the network device and to respond to the client with an IP address of the type of service identified in the first one of the plurality of DNS responses.

21. The method as recited in claim 20, wherein the client DNS server is further configured to obtain the type of service from the first one of the plurality of DNS responses and obtain an IP address corresponding to the type of service from a mapping table.

22. The method as recited in claim 9, wherein transmitting the plurality of DNS responses comprises transmitting the plurality of DNS responses via one or more intermediate routers configured to perform next-hop policy based routing based on the type of service.

23. A computer-readable medium storing thereon instructions for processing a DNS

request in a network device, the computer-readable medium storing thereon the following instructions:

instructions for receiving a DNS request indicating a domain name for which an IP address is requested; and

instructions for transmitting a plurality of DNS responses, each of the plurality of DNS responses being transmitted via a different path associated with a different type of service.

24. A network device adapted for processing a DNS request, comprising:

a processor; and

a memory, at least one of the processor and the memory being adapted for:

receiving a DNS request indicating a domain name for which an IP address is requested; and

transmitting a plurality of DNS responses, each of the plurality of DNS responses being transmitted via a different path associated with a different type of service.

25. A network device adapted for processing a DNS request, comprising:

means for receiving a DNS request indicating a domain name for which an IP address is requested; and

means for transmitting a plurality of DNS responses, each of the plurality of DNS responses being transmitted via a different path associated with a different type of service.

26. A system for selecting a service provider via which to process a client request, comprising:

a network device adapted for receiving a DNS request indicating a domain name for which an IP address is requested and transmitting a plurality of DNS responses, each of the plurality of DNS responses being transmitted via a different path associated with a different type of service;

one or more intermediate routers configured to perform next-hop policy based routing based on the type of service; and

a client DNS server associated with a client initiating the DNS request, the client DNS server being configured to identify a first one of the plurality of DNS responses to be received from the network device and to respond to the client with an IP address of the type of service identified in the first one of the plurality of DNS responses.

27. In a network device, a method of establishing a TCP connection, comprising:

receiving a TCP connection request from a client;

sending a plurality of TCP acknowledgement packets to the client via a plurality of paths, each of the plurality of paths corresponding to a type of service;

receiving an acknowledgment message from the client that indicates receipt of one of the plurality of TCP acknowledgement packets sent by the network device;

ascertaining the type of service via which the TCP acknowledgement packet received by the client was transmitted; and

providing an HTTP redirect to an IP address corresponding to the type of service.

28. The method as recited in claim 27, wherein the type of service indicates a service or service provider.

29. The method as recited in claim 27, wherein the TCP connection request comprises a TCP packet having a synchronize flag set and wherein each of the plurality of TCP acknowledgement packets comprise a TCP packet having a synchronize flag set and an acknowledgement flag set.

30. The method as recited in claim 27, wherein each of the plurality of TCP acknowledgement packets comprises a type of service field adapted for indicating a type of service, service, or service provider.

31. The method as recited in claim 27, wherein each of the plurality of TCP acknowledgement packets comprises a type of service field adapted for indicating a type of service to be used during next-hop based routing based on the type of service.

32. The method as recited in claim 27, wherein each of the plurality of TCP acknowledgement packets includes a sequence number field, the method further comprising:

providing a sequence number in the sequence number field indicating an order in which the plurality of TCP acknowledgement packets are sent.

33. The method as recited in claim 32, wherein receiving an acknowledgment message from the client that indicates receipt of one of the plurality of TCP acknowledgement packets sent by the network device comprises:

receiving an acknowledgement message from the client including the sequence number of a first one of the plurality of TCP acknowledgement packets received by the client.

34. The method as recited in claim 33, wherein each of the plurality of TCP acknowledgement packets further comprises:

a type of service field adapted for indicating a type of service, service, or service provider via which the corresponding acknowledgement packet is to be transmitted.

35. The method as recited in claim 34, further comprising:

obtaining the sequence number from the acknowledgement message received from the client;

determining a type of service associated with the sequence number; and

ascertaining an IP address corresponding to the type of service.

36. The method as recited in claim 35, wherein ascertaining an IP address corresponding to the type of service comprises:

performing a look up in a mapping table, the mapping table including a plurality of IP addresses, each of the plurality of IP addresses corresponding to a

different type of service.

37. The method as recited in claim 32, wherein each of the plurality of TCP acknowledgement packets further comprises:

a type of service field adapted for indicating a type of service, service, or service provider via which the corresponding acknowledgement packet is to be transmitted.

38. The method as recited in claim 32, wherein each of the plurality of TCP acknowledgement packets further comprises a type of service field adapted for indicating a type of service to be used during next-hop based routing based on the type of service.

39. A computer-readable medium storing thereon instructions for establishing a TCP connection, comprising:

instructions for receiving a TCP connection request from a client;

instructions for sending a plurality of TCP acknowledgement packets to the client via a plurality of paths, each of the plurality of paths corresponding to a type of service;

instructions for receiving an acknowledgment message from the client that indicates receipt of one of the plurality of TCP acknowledgement packets sent by the network device;

instructions for ascertaining the type of service via which the TCP

acknowledgement packet received by the client was transmitted; and

instructions for providing an HTTP redirect to an IP address corresponding to the type of service.

40. A network device adapted for establishing a TCP connection, comprising:

a processor; and

a memory, at least one of the processor and the memory being adapted for:

receiving a TCP connection request from a client;

sending a plurality of TCP acknowledgement packets to the client via a plurality of paths, each of the plurality of paths corresponding to a type of service;

receiving an acknowledgment message from the client that indicates receipt of one of the plurality of TCP acknowledgement packets sent by the network device;

ascertaining the type of service via which the TCP acknowledgement packet received by the client was transmitted; and

providing an HTTP redirect to an IP address corresponding to the type of service.

41. A network device adapted for establishing a TCP connection, comprising:

means for receiving a TCP connection request from a client;

means for sending a plurality of TCP acknowledgement packets to the client via a plurality of paths, each of the plurality of paths corresponding to a type of service;

means for receiving an acknowledgment message from the client that indicates receipt of one of the plurality of TCP acknowledgement packets sent by the network device;

means for ascertaining the type of service via which the TCP acknowledgement packet received by the client was transmitted; and

means for providing an HTTP redirect to an IP address corresponding to the type of service.